AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-32. (CANCELLED)

33. (Previously Amended) A solution hybridization kit for the detection of a target nucleic acid sequence for diagnosing genetic defects, microbial or viral infections in a biological sample with an accuracy of at least 89% comprising:

a) a sample transport medium for stabilization of the biological sample;

b) an unmodified nucleic acid probe complementary to the target nucleic acid sequence for formation of a double-stranded RNA/DNA hybrid;

c) a solid phase to which an anti-hybrid antibody or a functional anti-hybrid antibody fragment has been immobilized, wherein the antibody or antibody fragment specifically binds to a component of the double-stranded RNA/DNA hybrid; and

d) means for detecting the hybrid formed by hybridization of the probe and the target nucleic acid sequence.

34. (Previously Added) A non-radioactive hybridization assay for the detection of a target nucleic acid sequence in a biological sample comprising the steps of:

a) hybridizing a nucleic acid sequence in a hydrolyzed sample of cells to a complementary nucleic acid probe to form a double-stranded RNA:DNA hybrid;

b) capturing the hybrid onto a solid phase to which an anti-hybrid antibody or functional anti-hybrid antibody fragment has been immobilized, wherein the antibody or antibody fragment specifically binds to a component of the double-stranded RNA:DNA hybrid forming a bound hybrid;

c) eliminating any non-hybridized probe; and

d) binding an antibody reactive with a RNA:DNA hybrid to the bound hybrid forming an antibody bound hybrid, thereby detecting the target nucleic acid sequence.

35. (Previously Added) The assay according to claim 34, wherein the antibody reactive with a RNA:DNA hybrid is unlabeled, further comprising, binding a labeled antibody reactive with an antibody to the antibody bound hybrid.

36. (Previously Added) The assay according to claim 34, wherein the antibody reactive with a RNA:DNA hybrid is labeled.

37. (Previously Added) The assay of claim 34, wherein the non-hybridized probe is eliminated by digestion with an enzyme.

38. (Previously Added) The assay of claim 34, wherein the concentration of probe is between 1 and 500 ng/ml.

39. (Previously Added) The assay of claim 34, wherein the concentration of probe is between 20 and 200 ng/ml.

40. (Previously Added) The assay of claim 34, wherein the concentration of probe is approximately 75 ng/ml.

41. (Previously Added) A non-radioactive hybridization assay for the detection of a target viral nucleic acid sequence in a biological sample suspected of containing the virus, comprising the steps of:

a) hybridizing the target viral nucleic acid to a complementary nucleic acid probe to form a double-stranded RNA:DNA hybrid;

b) capturing the hybrid onto a solid phase to which an anti-hybrid antibody or functional anti-hybrid antibody fragment has been immobilized, wherein the antibody or antibody fragment specifically binds to a component of the double-stranded RNA:DNA hybrid forming a bound hybrid;

c) eliminating any non-hybridized probe; and

d) binding an antibody reactive with a RNA:DNA hybrid to the bound hybrid forming an antibody bound hybrid, thereby detecting the viral nucleic acid sequence.

42. (Previously amended) A non-radioactive hybridization assay for the detection of a target human papilloma virus (HPV) nucleic acid sequence in a biological sample suspected of containing the virus, comprising the steps of:

a) hybridizing the target HPV nucleic acid to a complementary nucleic acid probe to form a double-stranded RNA:DNA hybrid;

b) capturing the hybrid onto a solid phase to which an anti-hybrid antibody or functional anti-hybrid antibody fragment has been immobilized, wherein the antibody or antibody fragment specifically binds to a component of the double-stranded RNA:DNA hybrid forming a bound hybrid;

c) eliminating any non-hybridized probe; and

d) binding an antibody reactive with a RNA:DNA hybrid to the bound hybrid forming an antibody bound hybrid, thereby detecting the viral nucleic acid sequence.

43. (Previously amended) The assay according to claim 42, wherein the probe comprises a nucleic acid complementary to at least a portion of HPV 6 and HPV 11.

44. (Previously amended) The assay according to claim 42, wherein the probe comprises a nucleic acid complementary to at least a portion of HPV 16, HPV 18, HPV 31, HPV 33 and HPV 35.

45. (Previously amended) The assay according to claim 42, wherein the probe contains a nucleic acid complementary to at least a portion of one or more HPV types selected from the group consisting of HPV types 6, 11, 33, 42, 43, 44, 16, 18, 31 and 35.

46. (Previously Added) The assay of claim 41, wherein the target viral nucleic acid sequence is from hepatitis B virus (HBV).

47. (Previously Added) A solution hybridization kit for the detection of a target virus for diagnosing a viral infection in a biological sample with an accuracy of at least 89% comprising:

a) a sample transport medium for stabilization of the biological sample suspected of containing the virus;

b) a probe complementary to a target viral nucleic acid sequence for formation of a double-stranded RNA/DNA hybrid;

c) a solid phase to which an anti-hybrid antibody or a functional anti-hybrid antibody fragment has been immobilized, wherein the antibody or antibody fragment specifically binds to a component of the double-stranded RNA/DNA hybrid; and

d) means for detecting the hybrid formed by hybridization of the probe and the target viral nucleic acid sequence.

48. (Previously Added) A non-radioactive hybridization assay for the detection of a target Chlamydial nucleic acid sequence in a biological sample suspected of containing the Chlamydia, comprising the steps of:

a) hybridizing the target viral nucleic acid to a complementary nucleic acid probe to form a double-stranded RNA:DNA hybrid;

b) capturing the hybrid onto a solid phase to which an anti-hybrid antibody or functional anti-hybrid antibody fragment has been immobilized, wherein the antibody or antibody fragment specifically binds to a component of the double-stranded RNA:DNA hybrid forming a bound hybrid;

c) eliminating any non-hybridized probe; and

d) binding an antibody reactive with a RNA:DNA hybrid to the bound hybrid forming an antibody bound hybrid, thereby detecting the Chlamydia nucleic acid sequence.

49. (Previously Added) A solution hybridization kit for the detection of a Chlamydial infection in a biological sample with an accuracy of at least 89% comprising:

a) a sample transport medium for stabilization of the biological sample suspected of containing the Chlamydial infection;

b) a probe complementary to a target Chlamydia nucleic acid sequence for formation of a double-stranded RNA/DNA hybrid;

c) a solid phase to which an anti-hybrid antibody or a functional anti-hybrid antibody fragment has been immobilized, wherein the antibody or antibody fragment specifically binds to a component of the double-stranded RNA/DNA hybrid; and

d) means for detecting the hybrid formed by hybridization of the probe and the target Chlamydia nucleic acid sequence.